

Chapter 2  
**Lesson 7**

# Renaming Decimals

**You will need**

- thousandths grids
- hundredths grids
- pencil crayons

**GOAL**

**Represent decimals and relate them to fractions.**

Anne and Belle are pen pals. Anne goes to a school with 100 students. Belle goes to a school with 1000 students. There are 24 Grade 5 students in Anne's school. There are 240 Grade 5 students in Belle's school.



**How can you use decimals to compare the Grade 5 students in the two schools?**



## Sam's Explanation

I'll write a fraction for the number of Grade 5 students in Belle's school.

$$\frac{240}{1000}$$

I'll model the fraction on a thousandths grid.

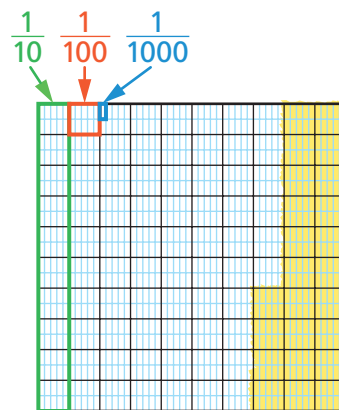
Each **column** is one tenth or  $\frac{1}{10}$  or 0.1.

Each **square** is one hundredth or  $\frac{1}{100}$  or 0.01.

Each **rectangle** is one thousandth or  $\frac{1}{1000}$  or 0.001.

I'll colour 240 thousandths on the grid.

In expanded form, 240 thousandths is  
2 tenths + 4 hundredths + 0 thousandths.

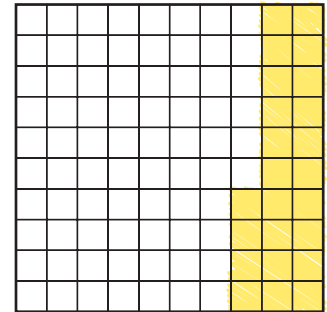


The decimal that represents the number of Grade 5 students in Belle's school is 0.240.

Now I'll write a fraction for the number of Grade 5 students in Anne's school.

$$\frac{24}{100}$$

There are only 100 students, so I can use a hundredths grid. I'll colour 24 hundredths on the grid.



### equivalent

Having the same value

For example,

$$\frac{8}{10} = \frac{80}{100}$$

In expanded form, 24 hundredths is 2 tenths + 4 hundredths.

The decimal that represents the number of Grade 5 students in Anne's school is 0.24.

The amount that is coloured on both grids is the same, so 0.240 and 0.24 are **equivalent** decimals.

## Reflecting

- How did writing both decimals in expanded form show that they are equivalent?
- Could Sam have modelled both  $\frac{240}{1000}$  and  $\frac{24}{100}$  on the same grid? Explain.
- How can you use a thousandths grid to show that 0.1 is equivalent to 0.10 and 0.100?

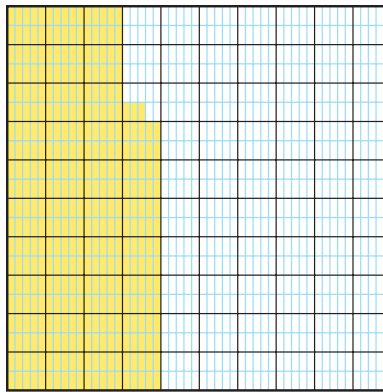


## Checking

- In Belle's school of 1000 students, 400 students play an instrument.
  - Colour a thousandths grid to represent these students.
  - Write fractions with denominators of 10, 100, and 1000 to represent the coloured part.
  - Write a decimal tenth, a decimal hundredth, and a decimal thousandth to represent the coloured part.

## Practising

- Emanuel coloured part of a thousandths grid.



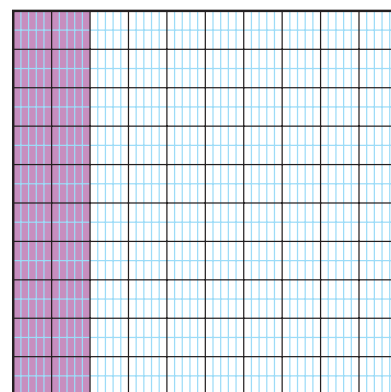
- Write a fraction to represent the coloured part.
  - Write a decimal thousandth to represent the coloured part.
- Colour each fraction on a thousandths grid. Then write each fraction as a decimal thousandth and a decimal hundredth.
    - $\frac{650}{1000}$
    - $\frac{280}{1000}$
    - $\frac{170}{1000}$
    - $\frac{310}{1000}$
  - Colour each decimal on a thousandths grid. Then write each decimal as a decimal hundredth and a decimal thousandth.
    - 0.7
    - 0.9
    - 0.3
    - 0.5
  - Colour each decimal on a thousandths grid. Then write each decimal as an equivalent decimal thousandth.
    - 0.29
    - 0.68
    - 0.14
    - 0.79

6. Colour each decimal on a thousandths grid. Then, if possible, write fractions with denominators of 10, 100, and 1000 to match each decimal.
- a) 0.2      b) 0.024      c) 0.78      d) 0.5
7. The chart below shows the portion of Earth that is covered by three oceans.

**Portion of Earth Covered by Three Oceans**

Ocean	Portion of Earth covered
Pacific Ocean	three hundred five thousandths
Atlantic Ocean	two hundred nine thousandths
Arctic Ocean	one hundred fifty thousandths

- a) Write a fraction for each number.  
 b) Colour a thousandths grid to represent each fraction.  
 c) Write a decimal for each number.
8. A thousandths grid is completely coloured when three different decimals are shown. One decimal is double one of the others.
- a) What could the three decimals be?  
 b) How do you know that there are many answers for part a)?
9. Tracy coloured part of a thousandths grid.



- a) Write fractions with denominators of 10, 100, and 1000 to represent the coloured part.  
 b) Write a decimal tenth, a decimal hundredth, and a decimal thousandth to represent the coloured part.